MILBANK MEMORIAL FUND

QUARTERLY BULLETIN

NEW YORK HEALTH DEMONSTRATIONS

VOL. VI APRIL 1928 NO. 2

The NEW YORK HEALTH CONFERENCE

held in connection with the

Sixth Annual Meeting of the Advisory Council

HEALTH demonstrations in New York State, and particularly the New York Health Demonstrations, were discussed at the two-day health conference, held in New York City on February 23rd and 24th in connection with the sixth annual dinner meeting of the Advisory Council of the Milbank Memorial Fund. Federal, state, city, and local health agencies were among nine organizations sponsoring the sessions of the conference, the group including the United States Public Health Service; the New York State and City Departments of Health; the New York State Medical Society; the State Charities Aid Association; the Bellevue-Yorkville Community Health Council; the East Har-

lem Health Center; the East Harlem Nursing and Health Demonstration; and the Milbank Memorial Fund.

The conference was opened by John A. Kingsbury, secretary of the Fund. Presiding officers of special sessions were Surgeon-General Hugh S. Cumming, of the United States Public Health Service; Dr. Louis I. Harris, commissioner of the New York City Department of Health; Dr. Charles J. Hatfield, executive director, Henry Phipps Institute; and George F. Canfield, president of the State Charities Aid Association.

PREVIOUS attendance records were broken when some 450 public health workers attended various sessions of the third New York Health Conference, held recently in New York City. The conference was made the occasion for a review of the past experience and the current programs in the rural, urban and metropolitan projects of the New York Health Demonstrations. ¶ In this issue is presented a summary of the meetings of the conference and of the sixth annual meeting of the Milbank Memorial Fund's Advisory Council.

"The experience all points in one direction—that a community in New York City with a health center gives more and better public health service than a community without one," said Bailey B. Burritt, general director of the New York Association for Improving the Condition of the Poor, in discussing the local health center movement. "The advantages of health centers as distributing points for community health service in a metropolitan area, are exemplified particularly by the experience of the East Harlem Health Center," added Homer Folks, chairman of the executive committee of the Center.

The Milbank Memorial Fund QUARTERLY BULLETIN is published by the Milbank Memorial Fund, 49 Wall Street, New York.

"It was the first department store of health and welfare in the City of New York," Mr. Folks continued. "It started as an experiment, but today it is as firmly established in the thoughts and affections of the people of the Harlem district as any factor in the life of the people of that locality. The value of the cooperation of which the Center is a product seems to be reflected in the falling death rates, moving in an opposite direction to those of Manhattan as a whole."

FOR the past five years the annual death rate from tuberculosis in Cattaraugus County has been lower than the rates predicted from the experience of the previous twenty-two years. For each of the last three years the death rate from this cause has been lower than in any year of the County's previously recorded history, which goes back to 1900. ¶ Possible reasons for this decline are discussed by Edgar Sydenstricker, chief statistician of the United States Public Health Service, in an article on page 35 of this issue.

Advantages of a cooperative district nursing program, such as are operated jointly by agencies engaged in nursing service in the Bellevue-Yorkville district and in the East Harlem district were discussed by Miss Katherine Tucker, R.N., director of The Visiting Nurse Society of Philadelphia; and by Miss Mabel S. Welch, R.N., assistant director of the East Harlem Nursing and Health Service.

Willingness of people in an urban community like Syracuse to support a public health program and the results of such a program on the vital statistics of a community of this kind were discussed at a special session over which Dr. Cumming presided. Dr. Herman G. Weiskotten, commissioner of health of the City of Syracuse, pointed out that the budget of the Syracuse Department of Health had been increased by

approximately $122,000 during the demonstration period as compared with an increase of less than $65,000 in the five years before the demonstration, and a similar increase had been effected in the appropriations for health work in the public schools, the budget of the Department of Public Instruction having been increased by approximately $56,000, as compared with an increase of $15,000 during the five-year period just preceding the demonstration. "A dollar expended for public health work is perhaps the most economical investment which it is possible for modern society to make," added

Dr. E. R. A. Seligman, professor of economics of Columbia University.

"It has been relatively easy to secure public support and the necessary appropriations from the city authorities for the development of needed public health service," added Dr. George C. Ruhland, deputy commissioner of health in Syracuse. "It is not easy, however, to secure the personnel for the building up and development of public health machinery. The supply of trained health workers is limited; and even though all other factors are favorable, it is not wise to establish new health services or to change the form of established services more rapidly than they can be assimilated."

The growth of the Syracuse Health Department has been "somewhat like the successful bringing up of children," declared Dr. Haven Emerson, professor of public health administration at the College of Physicians and Surgeons. "We have learned simplicity, patience, modesty, the value of education, and the necessity for continuity of education."

WHAT has been learned concerning the prevention and control of tuberculosis in Cattaraugus County was described by Dr. Stephen A. Douglass, former health officer of Cattaraugus County. "It has been shown that a program for tuberculosis control such as that established in Cattaraugus will substantially increase the number of tuberculosis cases found in the community, and that it has been possible to place under medical and nursing supervision, either at home or in the sanatorium, at least two cases of active tuberculosis for each thousand of population," he said.

That it is exceedingly difficult to prevent all infection, but that it should be easy to prevent a child or adult from being exposed repeatedly to tuberculosis, was pointed out by Dr. Lawrason Brown, medical director of Trudeau Sanatorium, in the discussion of Dr. Douglass' paper. He said that increased efforts to discover tuberculosis in childhood are extremely valuable because they lead to a hunt for further sources of infection. Dr. E. R. Baldwin, director of the Trudeau Foundation, praised the progress made in the home treatment of tuberculosis in Cattaraugus County. That the facilities of the county sanatorium were utilized to the fullest extent by the public, he thought noteworthy.

The value of cattle in Cattaraugus County has increased by approximately $1,000,000 because of the tuberculin testing and eradicating of bovine tuberculosis in that locality, according to Dr. Veranus A. Moore, Dean of the New York State College of Veterinary Medicine. Probably 5 per cent of human tuberculosis is traceable to tuberculosis in cattle, said Dr. Theobald Smith, director of animal pathology at the Rockefeller Institute.

"There is no single, large field in public health nursing, with the possible exception of industrial nursing, which is today more in need of development and study than that of

rural nursing," said Miss Jane C. Allen, general director of the National Organization for Public Health Nursing. Referring to the field practice offered in Cattaraugus County to student nurses at Teachers College, Columbia University, she said that Cattaraugus is the only place in the United States where such a complete and carefully planned rural experience is available as a part of a university course.

DR. LOUIS I. DUBLIN, statistician of the Metropolitan Life Insurance Company, said that in "certain diseases, such as typhoid fever, scarlet fever, whooping cough, diphtheria, diarrhea and nephritis, excellent results have been obtained in Syracuse." There was virtually no typhoid fever in the City in 1927, there being only about three deaths, and the number of deaths from scarlet fever and whooping cough was likewise very small. Deaths from diarrhea and nephritis have been reduced to about a tenth of what they were in 1917. Similarly, a notable reduction has occurred in the number of deaths from diphtheria. Tuberculosis mortality has fallen off approximately one-half and there has been a corresponding reduction in the pneumonia deaths. Study of the City's statistical records show, however, the need for more intensive work on problems presenting themselves in certain portions of the City, concluded Dr. Dublin.

It is obvious that in the promotion of public health work, cooperation of the medical profession, of public authorities and of the volunteer agencies, is absolutely necessary, said Mr. Canfield, in opening a discussion.

"We must recognize that there is a trinity of workers, consisting of the organized medical profession of the State, the State Department of Health and the voluntary organizations," responded Dr. James E. Sadlier, president of the New York State Medical Society. "In order to accomplish

COOPERATION IN PUBLIC HEALTH WORK

urged by ADVISORY COUNCIL *of the*
MILBANK MEMORIAL FUND
in a resolution adopted on February 23, 1928

[The Council is composed of prominent physicians, public health administrators, educators, social workers, and econo nists. That 30 of its 49 members are physicians indicates that the medical profession is preponderantly represented.]

WHEREAS, It is recognized that the conservation of public health is a primary concern of the State; and a regularly constituted board of health, and a staff appointed by it, is therefore a necessary part of well-organized government;

℄ *Whereas*, It is recognized that not only public health departments, but voluntary health agencies, organized medical societies and practicing physicians can contribute toward public health conservation through increasing the quantity and improving the quality of preventive and curative medical practice, as well as in other ways;

℄ *Whereas*, It is recognized, therefore, that there should be a continuously cooperative relationship of these groups with the constituted public health authorities;

℄ *Whereas*, It is recognized, moreover, that curative and preventive medicine must be practiced by physicians licensed by the State; and that, although there are a number of minor medical procedures which may be performed by nurses, such procedures should only be performed under the direction and supervision of a licensed physician;

℄ *Whereas*, It is recognized that the responsibility for public health administration rests primarily upon the duly constituted public health officials, the success of whose efforts would be greatly enhanced by the active participation of medical and lay voluntary agencies;

BE IT RESOLVED, That the Advisory Council recommend that the Milbank Memorial Fund continue its efforts to establish the principles set forth in the foregoing recitals.

the most that we can, there should be cooperation and an interlocking of activities in such a way as to make it most effective. The doctors of the State recognize the vital need for lay organizations in public health work. To my mind, the particular field of the lay organization is manifold, but it is particularly to provide and to add to the facilities which are necessary to increase the efficiency of the practice of medicine; to be the educators of the lay people; and to raise medical standards."

Dr. Linsly R. Williams, director of the New York Academy of Medicine, recommended that voluntary health agencies and social welfare organizations engaged in any type of health activity appoint on their governing boards official delegates of their local county medical society, selected officially by the society. Not only would such representation serve to keep the society officially informed on the nature of every new project, but it would be the means of obtaining the advice and counsel of the organized medical body before undertaking a new activity. He said that this would give the medical profession an opportunity to take greater interest in public health activities and an opportunity to take the leadership in the promotion of public health work.

Dr. Louis I. Harris said that a major contribution of voluntary health agencies was in serving as vigilance committees to help the official health agency keep alert to its opportunities for service, but he believed that all of the public health work in a political sub-division should be centered in the agency officially responsible for administering the county's public health program.

Dr. Lee K. Frankel, second vice president of the Metropolitan Life Insurance Company, expressed the opinion that the large constructive program of disease prevention of the future, not only in New York State, but in the entire

United States, must be one of centralization of all health activities, with authority resting in the official health body.

At a special meeting of the Advisory Council where this subject among others was discussed, a resolution concerning it was adopted. This is printed on an accompanying page.

THE annual dinner meeting of the Fund's Board of Directors with its Advisory Council was held on February twenty-third. Following an address of welcome on behalf of the directors, given by Albert G. Milbank, the meeting was presided over by Dr. Livingston Farrand, president of Cornell University. In discussing the New York Health Demonstrations, Mr. Folks said that he believed that they had demonstrated that "it is possible in a short period of time to recrystallize the general public interest in public health." Dr. Linsly R. Williams, director of the New York Academy of Medicine, re-emphasized the need for the active cooperation of practicing physicians in public health work. The public health outlook in the three areas of the New York Health Demonstrations was discussed by Mrs. F. R. Hazard, member of the Citizens' Committee, for Syracuse, Dr. C. A. Greenleaf, director of the County School Health Service, for Cattaraugus County and Health Commissioner Harris for the Bellevue-Yorkville district. In conclusion, Dr. C.-E. A. Winslow, professor of public health at Yale University, briefly outlined the place of voluntary agencies in the history of public health work. He said he believed it could be proven that at least three-quarters of the present public health program in this country had been established by voluntary agencies.

"The volunteer agency occupies a very significant place in the history of public health," Dr. Winslow said. "We acknowledge that the public health officer should be the ultimate judge and authority in the public health field, but the health officer who is wise, the health officer who is effective,

realizes that it is the voluntary agencies, the amateurs, who push forward for him, who supply his shock troops and attain each new point and then, if you will, turn it over to the profession.

"Sanitation, the basis of the whole public health movement, was initiated by Edwin Chadwick, a man who was in no sense a government official, but a voluntary agent in the health field," he continued. "The basis of our enlightened communicable disease control, the foundation of the science of bacteriology was laid by a voluntary agent, Pasteur. When Dr. Hermann M. Biggs began his contributions to the cause of public health, he was a voluntary agent. It was Dr. L. Emmett Holt and the Child Health Organization of America who initiated and carried over into the educational system the teaching of child hygiene. Dr. William F. Snow and his associates in the American Social Hygiene Association established the entire modern programme for social hygiene in this country.

THE lack of official local health service affecting a large proportion of our rural population is a matter which should be given the prompt and effective attention of all who have a general interest in our nation's welfare.

—JOHN WALRATH, *President*
Cattaraugus County Board of Health

THE DECLINE IN THE TUBERCULOSIS DEATH RATE IN CATTARAUGUS COUNTY

by EDGAR SYDENSTRICKER, *Statistician in the United States Public Health Service and Statistical Consultant to the Milbank Memorial Fund*

DURING the past five years a public anti-tuberculosis program has been developed in Cattaraugus County, New York, by the Board of Health of that County, that, according to the judgment of competent critics, embodies and practices modern principles and procedures of tuberculosis prevention, relief and cure.

During the same period and in the same area all five annual death rates from tuberculosis have been lower than the rates as predicted from the experience of the previous twenty-two years. For each of the last three years the tuberculosis death rate has been lower than in any year of its previous recorded history which goes back as far as 1900. Furthermore these three successive low rates constitute an event which has not been paralleled in this area since 1900.

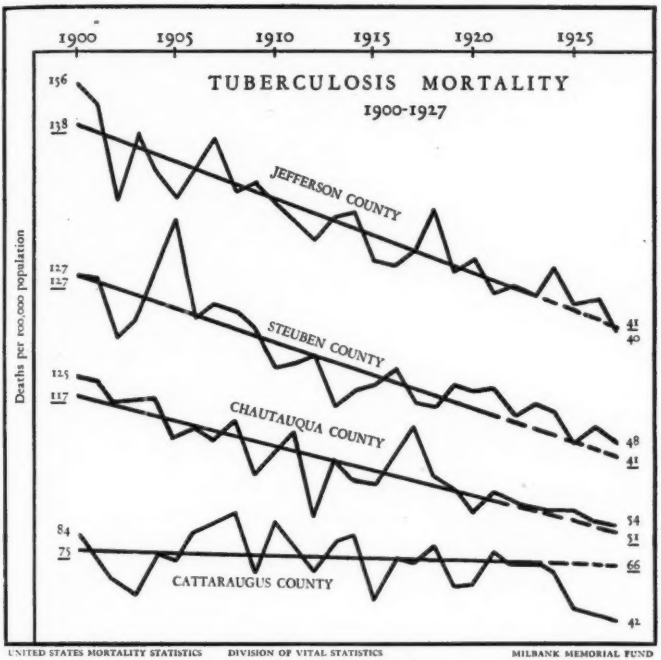
To most persons, especially to those who are conversant with the modern anti-tuberculosis program, this decline will appear as a result due in large measure to the development of an efficient public health administration in Cattaraugus County, more particularly of its anti-tuberculosis work. For, the prolongation of the lives of tuberculous individuals, the prevention of new cases, and the arresting of incipient cases, by modern methods of controlling the disease, are well established facts in the experience of those who are intimately engaged in these activities. But to the coldly scientific mind, accustomed to caution and trained in the habit of doubt, any conclusion as to a causal relationship between

the two series of events should rest on more complete evidence and should be established by more elaborate methods of appraisal. The situation may be likened to that in which the laboratory research worker finds himself. He may be honestly convinced of the soundness of his hypothesis and of the accuracy of his results but at the same time he realizes that his work must stand the test of scientific scrutiny not only for his own intellectual satisfaction but also in order that it may be established in other critical minds.

In a sense, therefore, the tuberculosis experience of Cattaraugus County, as well as that of any area or population group, may be regarded as an "experiment" in that it requires the application of the principles and the methods of scientific experimentation in measuring results of a specific factor especially when that factor has been deliberately introduced in order to bring about a definite result.*

The measurement of the results of anti-tuberculosis efforts, however, is not an easy task. We are accustomed to attempt it in terms of mortality, although we realize, or ought to realize, that a death rate is a poor index of what we are trying to evaluate. It is a faulty statistic for the reason that it may indicate on the one hand the prevalence of the disease, and on the other hand its fatality. It measures neither the one nor the other accurately. Furthermore, the annual number of deaths is so small in an area the size of Cattaraugus County as to be subject to wide variation from fortuitous circumstances. Again, it is a poor measure because the greatest emphasis in an anti-tuberculosis program is on preventing the disease, and on arresting it in those persons in whom the tubercle has been activated; the tuberculosis death rate can therefore measure only a fraction of the full

*Annual Report, Milbank Memorial Fund, 1926, Part II: The Measurement of the Results of Public Health Work.



Deaths from tuberculosis, all forms, in Cattaraugus County and in three other counties in New York State, per 100,000 population, 1900–1927. The straight lines indicate the trend of the death rate based on the period 1900–1922.

force of the campaign. Moreover, in the measurement of anti-tuberculosis efforts we observe the effects of various preventive and curative activities upon a stream of many continuous cases, each of which has its own course over a period of time. From this point of view the measurement of anti-tuberculosis work in adolescent and adult ages should be by different methods from those by which we measure an effort to prevent a definite event, such as a case of diphtheria or a death from measles. For the anti-tuberculosis campaign is not an effort directed toward a single objective; its objectives

MORTALITY *from* TUBERCULOSIS *in* CATTARAUGUS COUNTY

1900-1927

In the following table are given the data upon which the tuberculosis mortality rates for Cattaraugus County for 1900-1927 are based. The deaths of Indians are excluded for the reasons that it is believed that registration of deaths among Indians on the reservation situated in the County has been incomplete and that the Indian population has not been included in the health activities of the County. The Indian population has been deducted in the manner stated in a footnote. Deaths of non-residents in the J. N. Adam Memorial Hospital at Perrysburg, which is primarily an institution for residents of Buffalo, have been excluded, but no other correction for residence of decedents has been made.

Year	Population		Deaths					Death Rate per 100,000
	Total (1)	Exclusive of Indians (2)	Indians (3)	Non-residents (4)	Total Indians and non-residents	Total (5)	Net including Indians and non-residents	
1900	65,645	64,645	3		3	57	54	83.5
1901	65,673	64,673	3		3	49	46	71.1
1902	65,701	64,701	3		3	41	38	58.7
1903	65,729	64,729	3		3	37	34	52.5
1904	65,757	64,757	3		3	50	47	72.6
1905	65,785	64,785	3		3	48	45	69.5
1906	65,813	64,813	3		3	58	55	83.9
1907	65,841	64,841	3		3	61	58	89.4
1908	65,869	64,869	3		3	63	60	92.5
1909	65,897	64,897	3		3	43	40	61.6
1910	66,035	65,035	3		3	61	58	89.2
1911	66,592	65,592	3		3	53	50	76.2
1912	67,148	66,148	3		3	46	43	65.0
1913	67,705	66,705	3	1	4	56	52	77.9
1914	68,262	67,262	3	1	4	59	55	81.8
1915	68,818	67,818	3	2	5	39	34	50.1
1916	69,375	68,375	0	5	5	53	48	70.2
1917	69,932	68,932	3	4	7	54	47	68.2
1918	70,488	69,488	1	3	4	57	53	76.3
1919	71,045	70,045	4	4	8	48	40	57.1
1920	71,546	70,546	4	7	11	52	41	58.1
1921	72,000	71,000	2	4	6	58	52	73.2
1922	72,453	71,453	3	15	18	66	48	67.2
1923	72,907	71,907	3	9	12	61	49	68.1
1924	73,360	72,360	4	14	18	64	46	63.6
1925	73,814	72,814	2	14	16	49	33	45.3
1926	74,267	73,267	5	25	30	62	32	43.7
1927	74,720	73,720	3	25	28	59	31	42.1

(1) Population estimates on following basis: Period 1900-1920, on Federal censuses; 1920-1925, on Federal census of 1920 and State census of 1925.

(2) Assumed deduction of Indian population: 1,000 annually. Census enumeration showed the Indian population to be 1104 in 1900, 1013 in 1910 and 1162 in 1920 (XX Census Volume III: 678).

(3) For period 1900-1915, number of deaths of Indians estimated at 3 annually.

(4) Non-residents dying at the J. N. Adam Memorial Hospital in Perrysburg.

(5) Mortality data from the following sources: Period 1900-1914 from U. S. Mortality Statistics; 1915-1924, from New York State Department of Health; 1925-1927, from Cattaraugus County Department of Health.

Mortality from tuberculosis (all forms) at different ages in Cattaraugus County in 1916-1924 and 1925-1927.
(Indian deaths and non-residents dying at the J. N. Adam Memorial Hospital are excluded.)

Age	Rate per 100,000		Total Number of Deaths		Population Estimated July 1	
	1916-24	1925-27	1916-24	1925-27	1920	1926
All Ages	67.1	43.7	426	96	70546	73267
0— 4	14.5	14.5	9*	3	6913	6887
5— 9	15.0	0	9	0	6673	7143
10—19	35.3	12.5	40	5	12577	13342
20—29	129.3	59.0	127	19	10912	10741
30—39	121.1	78.8	110	25	10095	10580
40—49	61.6	66.6	47	18	8478	9005
50—59	65.3	42.1	41	9	6977	7122
60—69	53.4	51.7	23	8	4790	5158
70 & over	67.4	81.1	19	8	3131	3290
Unknown			1	1		

are several, each calling for a different kind of activity. It includes efforts to prevent incipient tuberculosis, to prevent the development of incipient cases into more serious stages; to arrest active cases, and to relieve cases in very advanced stages, and so far as possible to prolong their lives also. Obviously any single measure is inadequate for evaluating precisely the complete results of so varied a program.

In reviewing the experience thus far of Cattaraugus County, therefore, it is essential to keep in mind that the mortality rate for a period as short as three years, or even as five years, can reflect the results of specifically those anti-tuberculosis activities which affect the prolongation of lives of tuberculous individuals. In other words, the tuberculosis mortality rate in so limited a period can measure, and with a fair degree of definiteness, the effect of public health efforts upon the *fatality* of active cases only, rather than the activities that seek to prevent incipient cases or new "active" cases.

With the limitations set before us by these necessary definitions, it is proper to examine the tuberculosis death rates of Cattaraugus County from at least two points of view:

(a) the statistical significance of the decline in the gross rate, and (b) the nature of the decline as indicated by the changes in the rates among persons of different ages. Other analyses of the mortality record will be made later when further experience is available, and the case and morbidity data are now being studied for the purpose of ascertaining more precisely the results of other kinds of anti-tuberculosis activities.

So far as we know, no marked change in the ordinary conditions that affect the tuberculosis death rate, other than those which were generally prevalent and common to similar communities, has occurred in Cattaraugus County in the five years 1923-1927. Provisionally at least, therefore, we are warranted in assuming that the only factor of major importance, so far as possible effects upon the tuberculosis death rate are concerned, was the development of a modern anti-tuberculosis administration during this period.

Now in judging of the statistical significance of the decline in the tuberculosis death rate in Cattaraugus County in 1925-1927, we have so far attempted to answer three questions: (1) Could any of these low rates have been a variation arising solely from the small numbers involved, since only about 30 deaths have occurred in each of the three years? (2) Do these three rates constitute a unique occurrence judging by past variations in the tuberculosis rates in Cattaraugus County itself? (3) Is the Cattaraugus County experience of the past three years unique in comparison with generally similar areas in the same period.

The data for Cattaraugus County are given in the accompanying table, together with certain explanations as to the sources of the statistics used and certain corrections and eliminations made in order to render the statistics as comparable as possible throughout the period covered.

In applying any one of these tests, it is necessary to ascertain as accurately as possible what the trend of the tuberculosis death rate was in Cattaraugus prior to 1923, as well as in the other counties with which comparisons were made. For Cattaraugus County it was found that the tuberculosis death rate since 1900 had been practically on a level* with annual variations above and below this level which is indicated by the straight line on the accompanying chart. The experience of Cattaraugus was unusual in this respect. For in twelve other counties with whose tuberculosis mortality rates a comparison is made later in this report, the mortality was higher at the beginning of the period and a definite decline is shown since 1900. Why Cattaraugus has had such a favorable rate, we are unable to say until certain inquiries now under way may afford some explanation. But, feeling assured that the mortality record is reasonably accurate, this fact need not concern us here except in a respect which may be stated as follows: The intensive anti-tuberculosis work in Cattaraugus County was undertaken in an area where the death rate from the disease was already relatively low and had been on a low level for some years, and the further reduction of the death rate under such conditions becomes an experiment of unusual interest. Now, if no change in the trend of tuberculosis mortality had occurred subsequent to 1922, we would expect the value of this level to be about 67† per 100,000 in 1925-1927. As a matter of fact, the actual rates (45.3, 43.7 and 42.1) were from 34 to 37 per cent below the expected trend values.

Applying the first test, the probability that rates in three successive years as far below the trend values as the ob-

*A straight line fitted to the rates for 1900-1922 showed that the slope (value of b) was -0.33 ± 0.09 per 100,000 per year.

†66.8 ± 6.4 for 1926, using .67449 of $\sqrt{\frac{pq}{n}}$ where n = estimated population as of July 1, 1926.

served deviations would occur, as a result of fluctuations due to small numbers, is about 4 in a million. So that the decline can not be ascribed to these "chance" fluctuations.

Changes in the mean annual tuberculosis death rate by age groups in Cattaraugus County 1916-1924 over 1925-1927.

Age Group	Actual change in Rate per 100,000	Relative Change Per Cent
Under 5	0	0
5– 9	−15.0	−100
10–19	−22.8	− 64
20–29	−70.3	− 54
30–39	−42.3	− 35
40–49	+ 5.0	+ 8
50–59	−23.1	− 35
60–69	− 1.7	− 3
70 and over	+13.7	+ 20

Applying the second method, the probability that rates in three successive years as far below the trend values as the observed deviations would occur, using the annual deviations in the period 1900-1922 as the basis, is about 1 in 100,000.* In other words, if we can apply the theory of probability to such a problem as this, and assuming the independence of the events considered (and, statistically speaking, they may be so assumed), the occurrence of three rates as low as these for 1925-1927 may be judged as constituting a distinctly unique event.

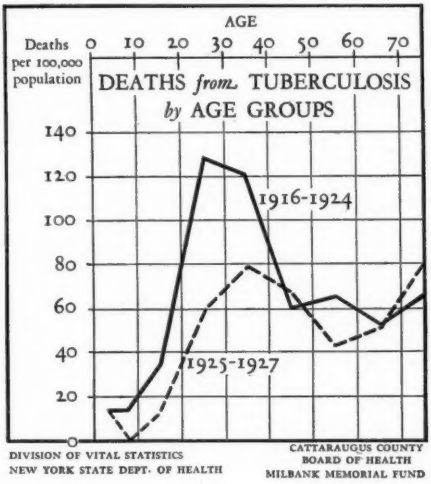
Applying the third method we have used very roughly as "controls," twelve other counties in New York State, namely, Otsego, Ontario, Delaware, Fulton, Chenango, Columbia, Herkimer, Montgomery, Tompkins, Steuben, Chautauqua and Jefferson. A preliminary selection of these counties was made on the grounds that they were generally comparable with Cattaraugus in that they did not contain any cities with a population of 50,000 or over, had established a county tuberculosis sanitorium during the period of consideration (1900-1927), do not constitute or contain a

*The value of *sigma* of annual deviations from the trend of the rates per 100,000 in 1900-1922 is 11.34.

suburban area, and included no State institutions or large private sanatoria. The annual variations were considered in the same way as those for Cattaraugus County. On the accompanying diagram three of them have been plotted as illustrations (page 43). A preliminary analysis indicates that the rates for 1925, 1926 and 1927 in these twelve counties were either above or not significantly below the expected rate for these years.*

The latter comparison has not been carried to the point of completion by any means. In order that more precise and complete comparisons will be possible, it is expected to refine them and to continue them in ensuing years, to study the comparability, in important respects, of these counties, as well as possibly other areas, with Cattaraugus; and to obtain data on the character and volume of the anti-tuberculosis work in some of the counties generally comparable in other relevant respects with Cattaraugus County.

Deaths from tuberculosis, all forms, by age groups in Cattaraugus County, per 100,000 population, in 1916–1924 and 1925–1927.



Of greater significance, in the writer's opinion, than the

*For Tompkins County each of the tuberculosis death rates as recorded for 1924-1927 was below the trend value but the difference in each instance was not statistically significant. Taking the four successive rates together, however, an apparently significant change is indicated.

results of purely statistical tests, such as the first two employed in the foregoing paragraphs, is the fact that the decrease in the Cattaraugus County tuberculosis death rate has taken place in the younger ages. This fact is clearly indicated by the accompanying table and diagram which compare the mean annual rates for 1916-1924 with those for 1925-1927 at different ages. The actual changes in the rates, as well as the relative changes, were as shown in the accompanying table.

The rate among children under 5 years of age shows no change, but it was already low in comparison with other areas,* the largest number of deaths in any year during the period 1916-1927 having been 3. The decreases in the succeeding age periods up to 40 years were considerable and were consistent. This is in contrast to the absence of such changes in the older age periods (40 years and over). If we make a division of the ages in three groups—under 5 years, 5 to 40 years, and 40 years and over—which is roughly characteristic of the ways the disease manifests itself in different periods of life, the decline in the tuberculosis rate in 1925-1927 was confined to the ages of later childhood, adolescence, and young adults, the decrease amounting to about 50 per cent of the mean rate for the previous nine years, and being in itself statistically significant.†

*For example: the 1924 rate among white persons under 5 years of age in the registration states of 1920 was 38 per 100,000; the 1925 rate among all persons under 5 years of age in New York State (exclusive of New York City) was 40 per 100,000.

†Since the downward trend of tuberculosis mortality for all ages in the period 1916-1922 was of negligible importance, and since no definite trend was indicated for the rates at any age, the comparison made above seems justifiable. The difference in the mean rates for the ages 5-39 years is 8 times its probable error, as shown below:

Age Group	Mean Annual Rate per 100,000		
	1916-1924	1925-1927	Difference
0 – 4	14.5	14.5	0.0
5 –39	78.9 ±3.1	39.1 ±3.8	39.8 ±4.9
40+	61.8 ±3.7	58.3 ±6.0	3.5 ±7.0

It may be stated that most of the differences in the mean rates for the more refined age groups in the ages 5-39 are also statistically significant when judged according to their ratios to their probable errors, and that the age distributions of the deaths in the two periods (using the quinquennial and decennial divisions) are significantly different when the Chi Square test is applied.

NEW YORK HEALTH DEMONSTRATIONS
SUPERVISORY AND OPERATING AGENCIES

STATE CHARITIES AID ASSOCIATION
State Committee on Tuberculosis and Public Health

Executive Staff

HOMER FOLKS, *Secretary* — GEORGE J. NELBACH, *Executive Secretary*
A. C. BURNHAM, M.D., *Assistant in Preventive Medicine*

CATTARAUGUS COUNTY HEALTH DEMONSTRATION
County Board of Health

JOHN WALRATH, *President*, Salamanca — MYRON E. FISHER, M.D., Delevan
WILLIAM C. BUSHNELL, Little Valley — M. L. HILLSMAN, M.D., Little Valley
WILLIAM A. DUSENBURY, Olean — J. W. WATSON, New Albion
MISS LILLA C. WHEELER, Portville

• • •

REGINALD M. ATWATER, M.D., *Acting County Health Officer*

County School Health Service

C. A. GREENLEAF, M.D., *Director*

County Tuberculosis and Public Health Association

C. A. GREENLEAF, M.D., *President* — ROWAN WHEALDON, *Executive Secretary*

SYRACUSE HEALTH DEMONSTRATION
Syracuse Health Department

HERMAN G. WEISKOTTEN, M.D., *Commissioner*
GEORGE C. RUHLAND, M.D., *Deputy Commissioner and Director*, Syracuse Health Demonstration

Department of Public Instruction, Health Service

HARRY J. CLARK, *President*, Board of Education — PERCY M. HUGHES, *Superintendent of Schools*
JOSEPH C. PALMER, M.D., *Director*, School Health Service

The Onondaga Health Association

WILLARD W. SEYMOUR, *President* — ARTHUR W. TOWNE, *Secretary*

Citizens' Committee on the Syracuse Health Demonstration

GILES H. STILWELL, *Chairman*

COMMUNITY HEALTH COUNCIL
Including the New York City Department of Health
BELLEVUE-YORKVILLE HEALTH DEMONSTRATION
in THE CITY OF NEW YORK

Officers of the Council

HON. LOUIS I. HARRIS, M.D., *Chairman* — ALTA E. DINES, R.N., *Secretary*
JOHN J. MCGRATH, M.D., *First Vice-Chairman* — JAMES ALEX. MILLER, M.D., *Chairman of Executive Committee*
LILLIAN D. WALD, R.N., *Second Vice-Chairman* — BAILEY B. BURRITT, *Chairman of Interim Committee*

• • •

Executive Staff

WILLIAM H. PARK, M.D., *Medical Officer* — SHIRLEY W. WYNNE, M. D., *Advisory Medical Officer*
J. L. BLUMENTHAL, M.D., *Advisory Medical Officer* — LEVERETT D. BRISTOL, M.D., *Executive Officer*
MISS AMELIA H. GRANT, *Assistant Executive Officer*

MILBANK MEMORIAL FUND

Board of Directors, Officers & Boards of Counsel

Board of Directors

CHELLIS A. AUSTIN
THOMAS COCHRAN
ALBERT G. MILBANK
JOHN G. MILBURN
GEORGE L. NICHOLS
ELIHU ROOT
EDWARD W. SHELDON

Officers

EDWARD W. SHELDON, *President*
ALBERT G. MILBANK, *Treasurer*
JOHN A. KINGSBURY, *Secretary*
UNITED STATES TRUST COMPANY OF NEW YORK, *Assistant Treasurer*
CATHERINE A. DORAN, *Assistant Secretary*
BERTRAND BROWN, *Assistant Secretary*
EDGAR SYDENSTRICKER, *Statistical Consultant*

Technical Board

BAILEY B. BURRITT
LIVINGSTON FARRAND, M.D.
HOMER FOLKS
JOHN A. KINGSBURY
JAMES ALEX. MILLER, M.D.
MATTHIAS NICOLL, JR., M.D.
WILLIAM H. WELCH, M.D., *ex-officio*
LINSLY R. WILLIAMS, M.D.

Advisory Council

DONALD B. ARMSTRONG, M.D.
EDWARD R. BALDWIN, M.D.
CORNELIUS N. BLISS, JR.
LEVERETT D. BRISTOL, M.D.
LAWRASON BROWN, M.D.
BAILEY B. BURRITT
GEORGE F. CANFIELD
HUGH S. CUMMING, M.D.
HENRY S. DENNISON
STEPHEN A. DOUGLASS, M.D.
LOUIS I. DUBLIN, PH.D.
HAVEN EMERSON, M.D.
LIVINGSTON FARRAND, M.D.
HOMER FOLKS
ELIZABETH G. FOX, R.N.
LEE K. FRANKEL, PH. D.
FRANK P. GRAVES, PH.D.
LOUIS I. HARRIS, M.D.
CHARLES J. HATFIELD, M.D.
C. F. HAVILAND, M.D.
LILLIAN A. HUDSON, R.N.
HERBERT S. JENNINGS, PH.D.
ALLEN K. KRAUSE, M.D.
DAVID R. LYMAN, M.D.
A. J. MCLAUGHLIN, M.D.
JAMES ALEX. MILLER, M.D.
V. A. MOORE, M.D.
SIR ARTHUR NEWSHOLME, M.D.
MATTHIAS NICOLL, JR., M.D.
EUGENE L. OPIE, M.D.
WILLIAM H. PARK, M.D.
W. S. RANKIN, M.D.
GEORGE C. RUHLAND, M.D.
E. R. A. SELIGMAN, PH.D.
HENRY C. SHERMAN, PH.D.
THEOBALD SMITH, M.D.
WALTER F. WILLCOX, PH.D.
WILLIAM F. SNOW, M.D.
FRED M. STEIN
EDGAR SYDENSTRICKER
PHILIP VAN INGEN, M.D.
LILLIAN D. WALD, R.N.
HERMAN G. WEISKOTTEN, M.D.
WILLIAM C. WHITE, M.D.
FRANKWOOD E. WILLIAMS, M.D.
LINSLY R. WILLIAMS, M.D.
C.-E. A. WINSLOW, PH.D.

WILLIAM H. WELCH, M.D., *Chairman*
JOHN A. KINGSBURY, *Secretary*